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CHARACTERISTICS RELEVANT TO PERFORMANCE AS AN ARMY LEADER: KNOWLEDGES, SKILLS, ABILITIES, OTHER CHARACTERISTICS AND GENERIC SKILLS

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This paper reviews the results obtained in attempting to construct a taxonomic system capable of describing individual attributes that influence leadership effectiveness. To identify the knowledges, skills, abilities and other characteristics (KSAOs) as well as the generic skills involved, a literature review was conducted examining studies concerned with relevant problem-solving processes. A general taxonomy of KSAOs capable of influencing leadership effectiveness was constructed which was applicable to both officers and noncommissioned officers.

INTRODUCTION

While a wide variety of factors may contribute to organizational effectiveness, the actions taken by an organization's leadership personnel may be the most significant. Recognition of the importance of leadership potential has led many organizations to invest millions of dollars in programs designed to enhance the quality of leadership. The effectiveness of these programs depends on a sound and accurate understanding of the nature of leadership in the context of the organization. Social scientists and management specialists have devoted a great deal of time and effort to the study of organizational leadership behaviors (Bass, 1981).

Over the years, a variety of theories have been advanced to describe and understand leadership. One of the earliest of these was the "great man" theory of leadership which posited that effective leadership was determined by certain enduring traits possessed by an individual. However, Stogdill (1948) pointed out the limited value of trait measures in the description and prediction of leadership performance. An attempt was then made to attribute leadership effectiveness primarily to situational determinants (Shaw, 1963). While the outcome of this research served to highlight many significant situational influences on leadership effectiveness, it did not prove to be any more effective in predicting leadership effectiveness than did the trait approach (Bass, 1981).

Recently, an attempt has been made to combine these two theoretical perspectives. Contingency theories contend that leadership effectiveness is determined by a joint function of certain attributes of the individual and certain attributes of the situation. Examples of leadership identification and development based on this model may be found in the work of Fiedler (1972), House and Mitchell (1968), Vroom (1976) and Yukl (1971). Unfortunately, these contingency theories have not proven to be highly effective tools for leadership identification and development. This is due, in part, to an attempt to explain leadership through a limited set of variables in situations that are highly complex.

An alternative approach to leadership identification and development has recently been developed by Mumford (1985). Drawing from earlier work on leadership and organizational system theory, Mumford (1985) contends that leadership effectiveness is a joint function of the individual and the situation. However, because organizations can generally be conceived of as open systems, there will be certain general circumstances underlying the nature of effective leadership in all organizations (Katz & Kahn, 1977). All organizations are engaged in a sociotechnical transformation process in which certain goals must be attained by the organization and its subsystems to ensure continued adaptation and survival. The attainment of these goals is facilitated by formal or informal integration and division of labor that serves to enhance the efficiency of the transformation process. This perspective suggests that an individual acts as a leader in any organization when he/she influences the nature of the transformation process occurring in all other subsystems within the organizational framework.

In many formal bureaucratic organizations, an individual's influence is prescribed based upon his/her position. Despite the fact that these parameters are often specified by the organization, leadership is also an inherent property of the individual. Even in instances where an individual action influences the transformation process occurring within an organization, this action constitutes leadership only when the individual had some choice as to the nature, content and/or timing of the action taken.

Effective leadership may be viewed as those actions taken by an individual as occupant of a boundary role that influence the transformation process occurring in other systems or subsystems and enhance the attainment of organizational goals. This definition distinguishes leadership from administrative headship, since administration is reflected in the occupancy of a position, whereas leadership is reflected in goal attainment within a position via discretionary activities. This definition distinguishes management or administrative operations from leadership by its emphasis on discretionary activity.

The definition of leadership described above, along with its conceptual framework, has a number of implications for leadership identification and development. By defining leadership as discretionary activities influencing others so as to facilitate the attainment of organizational goals, all incidents of effective leadership will entail the selection of a set of activities influencing others with the specific objective of enhancing goal attainment. As a form of goal directed discretionary activity, all leadership activities will involve social problem solving (Scandura, 1977). Therefore, it is apparent that two central phenomena are likely to influence leadership effectiveness. First, the individual's effectiveness in solving problems is likely to depend on the extent to which he/she has developed generic problem solving skills or processes. Second, in applying these skills in solving a specific problem, leadership effectiveness is likely to depend on the availability of the specific knowledges, skills, abilities and other characteristics required to understand and implement a solution in a particular situation. The general processes entailed in all problem-solving efforts will be critical to leadership effectiveness, but these processes cannot operate without the specific content required to solve the problem at hand.

In order for this model to contribute to more effective leadership, it will require identification of the generic problem solving skills, and specification of the specific knowledges, skills, abilities and other characteristics (KSAOs) required to solve the problems the individual will confront in a given position. Once these taxonomies of generic skills and KSAOs have been defined, individuals can be selected for leadership positions on the basis of the extent to which they already have demonstrated that they possess the attributes required for effective problem solving. Alternatively, an attempt might be made to design training strategies to facilitate the emergence of these KSAOs and generic skills.

To implement this framework in a practical setting, several steps must be carried out. First, the formal leadership positions must be specified. Then, the leadership discretionary activities occurring in these positions must be identified. In addition, the KSAOs required to

solve the problems entailed in these leadership discretionary activities must be identified. Finally, the generic problem solving skills employing these KSAOs should be delineated.

The following sections will describe the results obtained in an effort designed to provide a basis for applying this general approach to the description of organizational leadership in the Army. The following report will focus almost exclusively on defining KSAO and generic skill taxonomies reflecting attributes of the individual capable of influencing performance on these tasks. In the first section of this report, definitions of the KSAOs will be discussed. The second section will focus on definitions of the generic skills. The final section of this report will focus on the application of these generic skills and KSAO taxonomies within the context of Army leadership identification and development efforts.

DEVELOPMENT OF THE KNOWLEDGES, SKILLS, ABILITIES, AND OTHER CHARACTERISTICS (KSAOs)

In defining a taxonomy of KSAOs relevant to performance in Army leadership positions, a modified version of Fleishman's (1975) Ability Requirements Approach was employed. This approach attempts to define KSAO taxonomies through the following general procedure. Initially, the tasks being performed in the various positions under consideration are defined and described. These descriptions are then reviewed by psychologists who attempt to specify the KSAOs likely to influence task performance. The list of potential KSAOs employed in this phase is defined on the basis of the literature pertaining to the measurement and description of individuality. Subsequently, a sample of subject matter experts (SMEs) familiar with the jobs under consideration is obtained and these individuals are asked to review the preliminary taxonomy of KSAOs. In this review the SMEs are asked to recommend the addition and deletion of certain KSAOs as well as any necessary changes in the definition of the KSAOs. Finally, SMEs are asked to evaluate the importance of the KSAOs contained in the revised list with respect to their relationship to adequate job performance.

This general framework has been utilized in many empirical investigations and appears to provide an effective and relatively straightforward system for the definition of KSAOs (Fleishman & Quaintance, 1984). For instance, Fleishman and Mumford (1985) have found that application of this technique to the definition of KSAOs provides a highly valid technique for the definition of selection measures. Similarly, Fleishman and Quaintance (1984) have found that the KSAOs identified through this approach are excellent predictors of training and performance levels. Finally, it has been shown that differences in KSAO requirements provide an accurate, effective basis for the classification of jobs and the summary description of their interrelationships.

In accordance with the general framework described above, the first step in the present research involved defining the leadership discretionary activities occurring in E5 to O6 positions. These leadership tasks were defined as part of the earlier phases of this effort for officers and NCO respectively (see Wallis, Korotkin, Yarkin-Levin, and

Schemmer, 1985 for a more detailed discussion). Field verification of the task lists indicated that the officer and NCO task lists provided a relatively comprehensive description of the leadership activities occurring in a variety of duty assignments and specialities.

The following procedures were employed in developing the KSAO taxonomy:

- Three ARRO staff members reviewed the officer and NCO task lists.
- ARRO staff reviewed the research literature on individual differences, management, leadership, and social psychology to identify all KSAOs which might have some impact on performance of two or more of these leadership activities.
- ARRO staff specified a list of potential KSAOs and provided a definition for each KSAO.

During the review, it was found that minimal work had been done in specifying the knowledges likely to be relevant to effective leadership in the Army. Consequently, it was necessary to supplement this literature review with a knowledge-generation procedure. Two ARRO staff members reviewed task content and all available information concerning current Army leadership training programs. On the basis of this information, each staff member specified an initial set of knowledges and attempted to provide a sound, comprehensive definition for each knowledge. These knowledges were then added to the list of KSAOs identified on the basis of the literature and the leadership task review.

The list of KSAOs and definitions provided by each of the three primary reviewers was then subjected to a staff evaluation. Five staff members read through the definitions of the KSAOs and combined all dimensions which the majority felt were redundant with respect to other KSAO already included in the list. Additionally, an attempt was made to eliminate all of the more specific KSAOs which the majority felt were subsumed under some more general KSAO already included in the list. Finally, any KSAO was eliminated which the majority of the staff believed would have little or no impact on leadership effectiveness in the Army across a number of situations. After these initial decisions had been made, revised definitions were formulated for each of the remaining

KSAOs. All these procedures were carried out separately for officers and NCO. An overall list of the officer and NCO KSAOs may be found in Table 1.

Once the initial sets of potential officer and NCO KSAOs had been defined, a panel of SMEs was convened. The members of the panel consisted of recently retired Army Colonels who had served in combat, combat support and combat service support specialties. These individuals were asked to review the initial list of KSAOs and their associated definitions. During their individual reviews, panel members were asked to consider the leadership demands facing both officers and NCOs in the positions under consideration, and to recommended the elimination of any KSAOs not having a significant impact on leadership effectiveness. They were also asked to specify any KSAOs sufficiently similar to allow their combination. Finally, they were asked to recommend the inclusion of any KSAOs they felt might have a significant impact on leadership that were not presently included in the taxonomy. Once panel members had made their individual evaluations, they were asked to discuss them and come to a consensus decision.

These reviews were carried out separately for officers and NCOs. As a result of these reviews, a number of knowledges in the officer and NCO KSAO lists were either combined or eliminated. Further, a number of personal characteristics were added to both the officer and NCO lists, such as "courage" and "establishing support." Once the revised list of officer and NCO KSAOs was formulated, panel members were presented with a revised list of KSAO definitions. They were asked to review each of these definitions for clarity and appropriateness within the Army context. This review led to a few minor modifications in the initial definitions of skills, abilities and personal characteristics, along with somewhat more extensive revisions of the definitions associated with the remaining knowledges. When presented with the final list of officer and NCO KSAOs and their associated definitions, all panel members indicated that they provided a comprehensive list of leadership competencies.

Table 1

Initial List of Knowledges, Skills, Abilities, and Other Characteristics Required to Perform Leadership Job Performance Dimensions

KNOWLEDGES

1. MILITARY TACTICS
2. MILITARY STRATEGY
3. WEAPONS SYSTEMS
4. NUCLEAR, BIOLOGICAL, AND CHEMICAL WARFARE
5. ENEMY UNITS
6. MILITARY INTELLIGENCE
7. TERRAIN
8. COMMUNICATIONS
9. SUPPORT UNITS
10. OTHER UNITS
11. MAINTENANCE LOGISTICS
12. SUPPLY LOGISTICS
13. TRANSPORTATION LOGISTICS
14. UNIT GOALS
15. GOAL PRIORITIES
16. GOALS SIGNALS
17. MILITARY JUSTICE
18. RIGHTS
19. PRIVILEGES
20. CONSTRAINTS
21. STANDARD OPERATING PROCEDURES
22. RECORD KEEPING
23. INFORMAL NETWORKS
24. MATERIAL RESOURCES
25. PERSONNEL RESOURCES
26. TRAINING
27. EVALUATION
28. COUNSELING
29. MORALE
30. PERSONAL CAPABILITIES
31. HOUSEKEEPING
32. MILITARY DEPORTMENT
33. MILITARY LIFE
34. HUMAN BEHAVIOR
35. COMMANDER
36. MECHANICS
37. ELECTRONICS
38. ENGINEERING
39. MATHEMATICS
40. ARITHMETIC
41. COMPUTER SCIENCE
42. PHYSICAL SCIENCE
43. BIOLOGICAL SCIENCES
44. BEHAVIORAL SCIENCES
45. MANAGERIAL SCIENCES
46. CIVIL AFFAIRS
47. POLITICAL AFFAIRS
48. WORLD AFFAIRS
49. CULTURAL BEHAVIOR
50. SURVIVAL TECHNIQUES

COGNITIVE ABILITIES

1. FIELD INDEPENDENCE
2. LEVEL-SHARPENING
3. ORAL COMPREHENSION
4. ORAL COMMUNICATIONS
5. WRITTEN COMMUNICATION
6. VOCABULARY
7. IDEATIONAL FLUENCY
8. FIGURAL FLUENCY
9. ORIGINALITY
10. CREATIVITY
11. SPATIAL ORIENTATION
12. VISUALIZATION
13. SHORT-TERM MEMORY
14. LONG-TERM MEMORY
15. MEMORY SPAN
16. NUMBER FACILITY
17. MATHEMATIC REASONING
18. SENSORY ALERTNESS
19. MONITORING
20. SELECTIVE ATTENTION
21. ATTENTION SPAN
22. ATTENTION TO DETAIL
23. TIME SHARING
24. PROBLEM SENSITIVITY
25. FLEXIBILITY OF CLOSURE
26. SPEED OF CLOSURE
27. INDUCTIVE REASONING
28. DEDUCTIVE REASONING
29. CONVERGENT THINKING
30. DIVERGENT THINKING
31. INFORMATION SEEKING
32. INFORMATION ORDERING
33. ANALYZING INFORMATION OR DATA
34. COMBINING INFORMATION
35. CATEGORY FLEXIBILITY
36. ESTIMATION
37. PROBABILITY ESTIMATION
38. RISK TAKING
39. DECISION MAKING
40. ADMINISTRATIVE SKILLS
41. AESTHETIC JUDGMENT
42. MECHANICAL APTITUDE

PERSONALITY CHARACTERISTICS

1. SURGENCY VS. REPRESSION
2. REFLECTIVE VS. IMPULSIVE
3. INTROVERT VS. EXTROVERT
4. AGREEABLENESS
5. OPEN MINDED VS. DOGMATIC
6. AUTHORITARIAN
7. TOUGH VS. TENDER MINDED
8. SELF CONFIDENCE
9. SELF SUFFICIENCY
10. DOMINANCE
11. COURAGE
12. NEED FOR ACHIEVEMENT
13. ACHIEVEMENT VIA INDEPENDENCE
14. ACHIEVEMENT VIA CONFORMITY
15. CONSIDERATENESS
16. COOPERATIVENESS
17. COMPETITIVENESS
18. EMPATHY
19. ETHICAL
20. ENERGETIC
21. CONCENTRATION
22. PERSISTENCE
23. DEPENDABILITY
24. EMOTIONAL MATURITY
25. EMOTIONAL STABILITY
26. TOLERANCE OF STRESS
27. CALMNESS VS. ANXIETY
28. WELL BEING VS. DEPRESSION
29. OBJECTIVITY VS. PARANOID TENDENCY
30. ADAPTABILITY
31. DIVERSITY OF INTERESTS
32. SELF-MONITORING
33. MANIPULATIVENESS
34. INTERNAL CONTROL
35. DECISIVENESS
36. TOLERANCE OF HUMAN NATURE

PSYCHOMOTOR ABILITIES

1. RESPONSE ORIENTATION
2. RATE CONTROL
3. CONTROL PRECISION
4. REACTION TIME
5. CONTINUOUS MUSCULAR CONTROL
6. RESPONSE INTEGRATION

SENSORY AND PERCEPTUAL PROCESSES

1. GENERAL VISION
2. COLOR DISCRIMINATION
3. DEPTH PERCEPTION
4. GENERAL HEARING
5. PERCEPTUAL SPEED
6. MOVEMENT DETECTION
7. RESPONSE TIMING
8. RECOGNITION

PHYSICAL ABILITIES

1. PHYSICAL CAPACITY ENDURANCE
2. BODY COORDINATION

INTERPERSONAL CHARACTERISTICS

1. WORKING ALONE
2. WORKING WITH OTHERS
3. WORKING UNDER SPECIFIC INSTRUCTIONS
4. PRESTIGE/ESTEEM FROM OTHERS
5. SOCIABILITY
6. STAGE PRESENCE
7. SOCIAL PRESENCE
8. GROUP TOLERANCE
9. GROUP AFFILIATION
10. ADVISING
11. NEGOTIATING
12. PERSUADING
13. SEPARATION FROM FAMILY/HOME
14. ESTABLISHING COMMUNICATION/ RAPPORT
15. NONVERBAL COMMUNICATION

A panel comprised of five senior NCOs was convened to evaluate the NCO KSAOs. All these individuals were Master Sergeants who were currently completing a course at the U.S. Army Sergeants Major Academy. Panel members were again drawn from the combat, combat support and combat service support branches. In this meeting, panel members were presented with the list of NCO KSAOs that had been formulated in the previous meeting along with their definitions. The panel was asked to identify any additional KSAOs that might influence the leadership performance of noncommissioned officers, and any KSAOs they thought should be combined or eliminated. Once panel members had made their personal evaluations they were asked to discuss them and come to a consensus concerning any necessary changes. After a consensus had been reached concerning the content, they were asked to review the definitions associated with this revised set of KSAOs and recommend any changes necessary to enhance the clarity of these definitions and their appropriateness within the Army context. Finally, they were asked to evaluate the comprehensiveness of the KSAO taxonomy as a basis for describing individual characteristics contributing to effective leadership.

In this panel session, two new knowledges and one personal characteristic were added. Most panel members felt the KSAOs were important to effective leadership and were not redundant. All indicated that the revised taxonomy provided a highly comprehensive description of the personal characteristics that might influence leadership effectiveness.

There are some slight differences between the officer and NCO taxonomies. In general, however, the findings indicated that a nearly identical set of characteristics was relevant to performance in various leadership positions for both officers and NCOs. Comparison of the final KSAO taxonomies derived for officers and NCOs provides evidence supporting the comprehensiveness of this descriptive system.

Based upon the above findings, relatively little effort was required to carry out this additional refinement due to the high degrfee of similarity between the final officer and NCO KSAO taxonomies. Two ARRO staff members reviewed the content of these two taxonomies and retained all KSAOs that appeared in both lists. These common KSAOs constituted the core elements of the general taxonomy. In all instances, the defi-

nition assigned to these KSAOs was the simplest of those found in the two original taxonomies. The remaining KSAOs that were unique to both the officer and noncommissioned officer lists were examined. All KSAOs that appeared to be of little importance were eliminated. Those KSAOs that could be subsumed under other categories were incorporated into already existing dimensions. Finally, any unique KSAO that was unrelated to the KSAOs already included in the core list, and that appeared to be of some importance in describing leadership activities, was included in the general list of KSAOs although its definition was broadened to allow its application in the description of both officer and NCO competencies.

A complete listing of the KSAOs included in the officer and NCO taxonomy along with their associated definitions may be found in Appendix A. In constructing this general taxonomy, three KSAOs were eliminated and six KSAOs were merged. The KSAOs included in this taxonomy do not appear amenable to further reduction. Attempts to combine the KSAOs could not be justified on the basis of either the literature or expert judgment. This general taxonomy was not only comprehensive but provided the most parsimonious set of descriptive categories that could be obtained without the aid of more advanced, statistical data summarization techniques.

While the general KSAO taxonomy appears to provide a comprehensive and general summary description of the personal characteristics likely to influence effective performance in various leadership activities, this taxonomy can only provide an effective basis for the identification and development of Army leadership if it is possible to determine which of these KSAOs are more or less important to effective performance in a given leadership position. This linkage is essential because it serves to specify which KSAOs should be developed or used in selection and training. A small pilot study was carried out to determine the feasibility of linking KSAOs to specific position requirements.

There are a variety of ways in which this linkage might be accomplished. Incumbents and their supervisors or job analysts could be asked to evaluate the importance of each KSAO in performing each task, or to

evaluate the importance of each KSAO in performing the task incorporated within a performance dimension. These evaluations might be made on the basis of the job as a whole. Finally, a variety of specific strategies might be used in evaluating importance including the frequency, criticality or general importance of a given KSAO to performance on tasks, dimensions or jobs.

The complexity of leadership activities in the Army positions under consideration indicates that reliable and accurate evaluations would not be obtained by examining the job as a whole due to the complexity of the rating task (Fleishman & Quaintance, 1984). The number of tasks that would have to be evaluated in each position is large enough that it is not feasible to evaluate the KSAOs with respect to each task. Instead, the linkage should be made through some form of task summary dimensions. The evaluations should focus on the general importance of the KSAOs, since it is difficult to assess the frequency or criticality of a KSAO.

The initial pilot study was carried out using a sample of 87 officers and 163 NCOs from Fts. Carson, Riley, and Benning. Those individuals were currently assigned to E5 to O6 positions in combat, combat support and combat service support branches. In a series of group testing sessions, these individuals were presented with a description of the project and were then asked to read through the questionnaire booklets.

While the sample size employed in this pilot effort was not sufficient to allow any firm conclusion to be drawn concerning the specific KSAO requirements of various positions, it did provide some important information concerning the feasibility of the approach. It was found that most individuals could complete this task in the two hours provided. It also was found that subjects had little difficulty in understanding either the KSAOs or the rating tasks. Finally, it was found that consistent patterns of KSAO ratings characterized certain positions and that incumbents could differentiate among KSAOs with respect to their criticality.

GENERIC SKILLS TAXONOMY

The introduction to this report indicated that generic skills may be viewed as general attributes of the individual which will influence the individual's success or failure in all problem solving activities. It was argued that generic skills represented general processes underlying all problem solving efforts. This particular conception of the generic skills leads to one fundamental problem in defining the generic skills taxonomy.

If generic skills are conceived of as a process underlying all problem solving efforts, it becomes somewhat unclear as to how the components of this taxonomy are to be defined. Standard task analysis procedures and expert observations do not provide an adequate framework for such efforts since they depend upon overt behavior. Further, it seems likely that the underlying abstract nature of these processes would effectively prohibit the empirical specification of generic skills through incumbent interviews or critical incident techniques. Finally, it appears that a simple clustering of KSAOs will not lead to the definition of an adequate generic skills taxonomy.

A purely empirical approach of the type employed in industrial psychology may not provide a fully adequate basis for the definition of a generic skills taxonomy. This is not to say that generic skills cannot be identified through more subtle and powerful laboratory methods. In fact, a variety of laboratory investigations have been conducted, resulting in the identification of general problem solving processes (Sternberg, 1981). Unfortunately, the scope of the present study did not permit a comprehensive replication of these investigations within the Army. The existing literature did appear sufficient to allow the development of a preliminary, qualitative taxonomy of generic problem-solving skills.

Some of the studies examined in this effort included Sternberg's (1981) book on intelligence and problem solving, Einhorn and Hogarth's (1981) book on decision making and Scandura's (1977) book on problem solving. In defining potential generic skills on the basis of this literature, it was argued that each generic skill must fit into an

organized framework that begins with the identification of a problem and ends with the evaluation of solution implementaton.

There are several considerations that should be pointed out with respect to the generic skills. First, generic skills should not be viewed as traditional knowledges, skills and abilities. Rather, they are more similar to the meta-process held to underlie problem-solving, reasoning and general intelligence (Sternberg, 1981; Resnick & Glaser, 1977). Second, the list of generic skills was derived from a comprehensive review and evaluation of the relevant literature. The recent emergence of this literature, and the approach taken in the present effort, suggests that this list should not be viewed as exhaustive. Third, training, which effects these generic skills, has been shown to lead to enhanced performance on problem-solving tasks (Campione & Brown, 1977, 1979; Polson & Jeffries, 1982). Finally, while these generic skills are general enough to be involved in all problem-solving attempts, the pattern of skill usage may vary across roles and positions.

A schematic overview of the generic skills identified in the review may be found in Figure 1. Twelve generic skills were identified in the literature, seven of which represent control processes and five of which represent production processes.

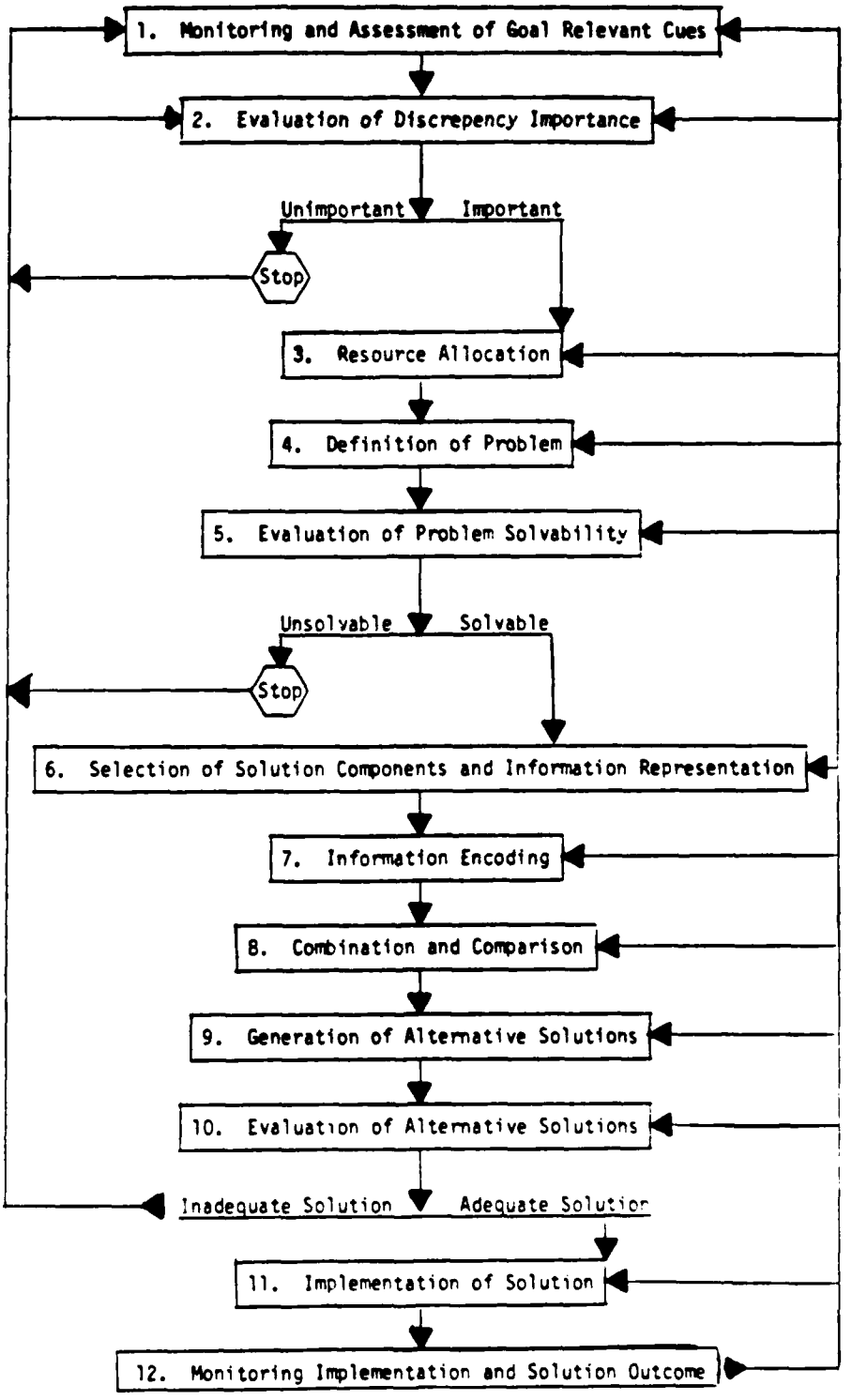

Figure 1. Generic skills.

IMPLEMENTATION AND APPLICATIONS

Because generic skills represent general processes employing many KSAOs relevant to the problem situation at hand, there will not be a fixed relationship between any given subset of KSAOs and particular generic skills. The nature of these relationships is likely to shift with problem content, since an individual's definition of the problem and the available information will tend to structure the selection of KSAOs. Because an individual's background and life history will exert a significant influence on the operation of any process, it is quite possible that different individuals will utilize or rely on different KSAOs when employing a generic skill in a common problem situation. Different individuals may use different KSAOs in a common generic skill framework to arrive at equally acceptable but qualitatively different problem solutions. One factor especially likely to contribute to these differences among individuals is their pattern of strengths and weaknesses in the KSAOs. Regardless of the specific origin of these complexities, it is clear that there will be no simple one-to-one relationship between the KSAOs and the generic skills.

The relationship between leadership activities and the KSAOs and generic skills is more straightforward. The generic skills will influence the effectiveness of all discretionary activities, regardless of the particular problem-solving demands made by the leadership positions. However, it is possible that the amount of time an individual employs a generic process and the importance of effective application of this process to effective leadership activity, will vary with respect to position and to the particular nature of the problem-solving demands. For instance, the development of alternative solutions may be more important for staff officers, whereas the evaluation of alternative solutions may be more important for line officers. While the generic skills will be relevant to all incidents of effective discretionary activity, it is possible that the profile of skill utilization may vary.

In the areas of leadership identification, these taxonomies might have substantial value as a guide to selection and placement efforts. Initially, the extent to which an individual can employ the generic

problem-solving skills might be assessed through standard tests of reasoning ability (Mumford, 1985). The individual's performance on these indices might then be used for selection. Alternatively, the KSAOs likely to be related to effectiveness in a given position could be defined and standardized measures of these characteristics might be developed. Those KSAOs which could not be trained might be defined. Individuals' status on these KSAOs might then also be employed as a basis for selection.

While these selection strategies are likely to have substantial value, they have their own strengths and weaknesses. For instance, the generic skill of general intelligence is most likely to be useful when individuals are being selected for a long-term career involving a number of assignments. When individuals are being selected for a specific position, the KSAO strategy would seem more appropriate. Of course, individuals must be capable of performing effectively in their first leadership position as well as any other positions they might enter during a later phase of their career. An optimal selection strategy would entail selecting individuals on the basis of KSAOs and generic skills. A similar strategy may be used to identify high potential leaders when the KSAOs and generic skill requirements of the higher level positions targeted for developmental efforts have been defined.

A second area in which taxonomies might be employed is in the differential placement of leadership personnel. For instance, various technical specialties might be clustered, and the KSAOs required for effective leadership in each of these specialties might be delineated. Subsequently, the status of individuals on these KSAOs would be assessed and the individuals would be assigned to that specialty among the best available alternatives. Alternatively, the KSAOs might be determined for each specific leadership position. This information would then be used to place individuals by assigning the individual to that specialty that provides the best match with the KSAO demands made by her/his most recent successful assignment.

The KSAO and generic skill taxonomies are also likely to have substantial value in leadership development efforts. The generic skills provide a set of constructs likely to be relevant to performance on

nearly all leadership positions and thus to serve as a global framework for guiding all leadership development efforts. This might be accomplished by constructing realistic training experiences, and then systematically providing trainees with feedback on their application of the generic skills. Alternatively, training efforts could be designed in such a way that they would provide the background required to effectively employ the generic skills.

These generic skill training strategies could be supplemented by use of the KSAO taxonomy. For example, a knowledge of the KSAOs required for effective leadership in a given position should provide trainers with a general set of guidelines for focusing their efforts on the development of specific knowledges and skills. If a variety of positions spanning a number of levels of the organizational leadership were examined, this information could be used to develop a sequential and progressive leadership development program that would maximize the efficiency of training efforts.

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Appendix A

Definitions of Knowledges, Skills, Abilities, and Other Characteristics for Both Officers and NCOs

Knowledges

1. **Military Tactics:** Has knowledge of operational procedures in combat (e.g., attack, defend, delay, feint) and how they are to be carried out in a combat situation.

2. **Military Strategy:** Has knowledge of long range planning and extensive operations in order to achieve objectives of national policy.

3. **Short Range Plan and Planning Procedure:** Has knowledge of short range planning for use of unit for combat, non-combat and emergency operations.

4. **Weapons Systems:** Has knowledge of the nature, maintenance and potential uses of available armaments and the defense of units against such armaments.

5. **Survival Techniques:** Has knowledge of land navigation and of requirements and strategies for survival in various physical environments.

6. **Military Intelligence:** Has knowledge of the enemy and relevant geographic areas as well as the implications on training, tactics, logistics, etc.

7. **Information Channels:** Has knowledge of how, when and to whom information should be communicated and the appropriate channels for this communication.

8. **Other Units:** Has knowledge of other units within the organization; particularly their responsibilities, current activities, capabilities, limitations and procedures for obtaining support.

9. **Logistics:** Has knowledge of logistic needs and the appropriate procedures for fulfilling these needs in an economical fashion.

10. **Unit Goals:** Has knowledge of unit goals/missions, their priorities and how they relate to the mission and goals of the Army.

11. **Military Justice:** Has knowledge of the U.C.M.J. and its application in particular situations.

12. **Standing Operating Procedures:** Has knowledge of the routine operations which must be accomplished as well as the rules or procedures specifying how, when, and where they are to be accomplished or modified.

13.	**Informal Networks:**	Has knowledge of the alternative, informal ways of accomplishing tasks within the organization.
14.	**Resources:**	Has knowledge of the techniques for managing resources (e.g., personnel, facilities, equipment, time and money) and how resources should be obtained in and retained allocated to meet unit goals.
15.	**Instruction:**	Has knowledge of what must be trained and how, when, where, and by whom training should be given.
16.	**Evaluation:**	Has knowledge of the appropriate procedures for appraising individuals (e.g., their capabilities and limitations) and programs.
17.	**Individual Guidance:**	Has knowledge of the methods for eliciting needs and problems facing subordinates and the actions which may be taken in order to improve subordinates' military performance.
18.	**Morale:**	Has knowledge of the general motivational level and organizational commitment of individuals and the steps which may be taken to improve them.
19.	**Personal Capabilities:**	Has knowledge of the importance of personal strengths and weaknesses and requirements and standards for technical compatible and further professional development.
20.	**Military Life:**	Has knowledge of military history, organization, traditions, protocol, deportment, rights privileges, benefits, constraints, and obligations.
21.	**Military Behavior:**	Has knowledge of how individuals are likely to behave in various military and social situations.
22.	**Science and Engineering:**	Has knowledge of the basic principles of science and engineering.
23.	**Political and International Affairs:**	Has knowledge of major trends and current issues in political, cultural and world affairs and their implications for the military.
24.	**Professional Ethics:**	Has knowledge and understanding of the highest standards of fundamental values of the U.S. Army Officer.

Cognitive Abilities

1.	**Oral Comprehension:**	Understand the meaning of spoken words and the ideas associated with them.
2.	**Oral Communication:**	Communicate ideas with spoken words.
3.	**Written Comprehension:**	Understand written words and sentences.
4.	**Written Communication:**	Communicate with written words and sentences.
5.	**Originality:**	Produce creative and effective responses related to a given topic or situation.
6.	**Inductive Reasoning:**	Use separate pieces of information to form general rules or principles.
7.	**Deductive Reasoning:**	Apply general rules to specific problems to come up with logical conclusions.
8.	**Decision Making:**	Select and evaluate possible options which lead to the solution of a problem. This includes selection of the best approach to use in reaching the decision.
9.	**Information Evaluation:**	Assess information in order to determine whether the value of additional information is likely to be greater than the cost or effort of obtaining it.
10.	**Alertness:**	Maintain mental awareness and physical endurance over extended periods of time.
11.	**Concentration:**	Perform a task in the presence of distractions or under monotonous conditions without significant loss in efficiency.
12.	**Attention to Detail:**	Give careful attention to various aspects of the work; are sure that nothing is overlooked.
13.	**Multiple Attention:**	Shift back and forth between two or more sources of information.
14.	**Problem Sensitivity:**	Recognize difficulties before or early in their development.

15. **Memory:** Learn and store relevant information and selectively recall and use that which is relevant to a specific context.

16. **Mechanical Comprehension:** Determine the functional interrelationship of parts within a mechanical system.

17. **Monitoring:** Maintain an awareness of relevant indicators over a period of time, especially where they occur infrequently or against a continually changing background.

Physical Abilities

18.	**Physical Capabilities:**	Abilities including strength, endurance and coordination, as well as adequate sensory capacity.

Other Characteristics

19.	**Judgment:**	Analyze people and events or think things over rather than to act in a spontaneous fashion.
20.	**Conformance to Organizational Requirements:**	Function in structured situations, taking orders from superiors, giving orders, and closely controlling subordinate activities.
21.	**Self Confidence:**	Believe in own abilities, personal competence or expertise, and do not fear failure.
22.	**Courageous:**	Willing to take personal risks to achieve objectives, does not avoid unknown or stressful situations, and is willing to take necessary but unpleasant actions in various situations.
23.	**Initiative:**	Have strong motivation for accomplishing challenging tasks, trying to do personal best, and trying to achieve results.
24.	**Considerateness:**	Interested in the welfare of others, trying to put others at ease, being polite, displaying warmth and respecting others.
25.	**Competitiveness:**	Try to win, to enjoy competition and challenge.
26.	**Integrity:**	Keep promises, to carry out responsibilitties, to follow plans, and to be careful and conscientious.
27.	**Adaptability:**	Adjust to new situations, long separations from home and family and other valued interpersonal situations, being resourceful in solving problems, anticipating difficulties, enjoying new people, things, and activities, and operating in changing, frustrating, stressful, or dangerous situations.
28.	**Persistence:**	Continue working on difficult tasks in spite of obstacles, when tired or bored, and not become discouraged.
29.	**Enthusiasm:**	Inspire others to work willingly.
30.	**Work Actions:**	Willingness to work towards group goals either alone or with others and expend substantial effort to meet these goals.
31.	**Public Speaking:**	Speak well before audience.

32.	**Social Presence:**	Poised and self-assured in social situations and engage in socially appropriate behavior.
33.	**Tact:**	Sensitive to the behavior, attitudes, and opinions of others.
34.	**Persuasion:**	Influence others with respect to some action or point of view.
35.	**Establishing Rapport:**	Interact in a way which creates openness, trust, and confidence among persons involved.
36.	**Negotiation:**	Deal with others in order to reach an agreement or solution.